

Former Hess Port Reading Complex
AOC 103 – Fire Fighting Area / Fire Pits
Site Investigation Summary &
Recommendations



AOC 103 – Site Investigation Summary

- 7 monitoring wells installed to 14-15 feet below grade (see next slide for map)
- Monitoring well screen interval from approximately 1 to 2 feet below grade to the base of the well
- Approximate Depth to Groundwater (DTW) during well installation – approximately 3 feet below grade
- No observations of ‘burned material’ during well installation
- Soil boring observations:
 - Photoionization Detector (PID) Readings – ranging from non-detect to 95 ppm
 - Odors – organic-like and petroleum-like odors detected in select borings
 - Meadowmat encountered at approximately 14-15 feet below grade



**Current AOC 103
Monitoring wells
1979 Historic Aerial
Photograph**

1 inch = 100 feet

Monitoring Well FA-6 – highest concentration of PFOS (61.7 ppb)

FA-1	
Sampled	01/29/2020
Benzene	ND
PFOA	0.89
PFNA	ND
PFOS	4.45
Benzo(a)anthracene	ND
TDS	129

FA-3	
Sampled	01/29/2020
Benzene	1.8
PFOA	0.0169
PFNA	0.0062
PFOS	0.868
Benzo(a)anthracene	0.232
TDS	130

FA-7	
Sampled	01/29/2020
Benzene	ND
PFOA	0.0189
PFNA	0.004
PFOS	1.96
Benzo(a)anthracene	ND
TDS	166

FA-2	
Sampled	01/29/2020
Benzene	ND
PFOA	0.004
PFNA	0.0035
PFOS	0.17
Benzo(a)anthracene	ND
TDS	118

FA-4	
Sampled	01/29/2020
Benzene	ND
PFOA	0.221
PFNA	ND
PFOS	33.8
Benzo(a)anthracene	0.134
TDS	624

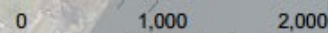
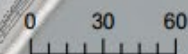
FA-6	
Sampled	01/29/2020
Benzene	ND
PFOA	0.276
PFNA	ND
PFOS	61.7
Benzo(a)anthracene	ND
TDS	201

FA-5	
Sampled	01/29/2020
Benzene	1.2
PFOA	0.0087
PFNA	0.0274
PFOS	0.421
Benzo(a)anthracene	ND
TDS	151

		NJ Groundwater Criteria (NJAC 7:9C 9/4/18)1	NJ Interim Groundwater Criteria (NJAC 7:9C 1/17/19)2
Benzene	ug/l	1	-
Perfluorooctanoic acid (PFOA)	ug/l	-	0.01
Perfluorononanoic acid (PFNA)	ug/l	0.013	-
Perfluorooctanesulfonic acid (PFOS)	ug/l	-	0.01
Benzo(a)anthracene	ug/l	0.1	-
Solids, Total Dissolved	mg/l	500	-

*all units in ug/l (ppb)

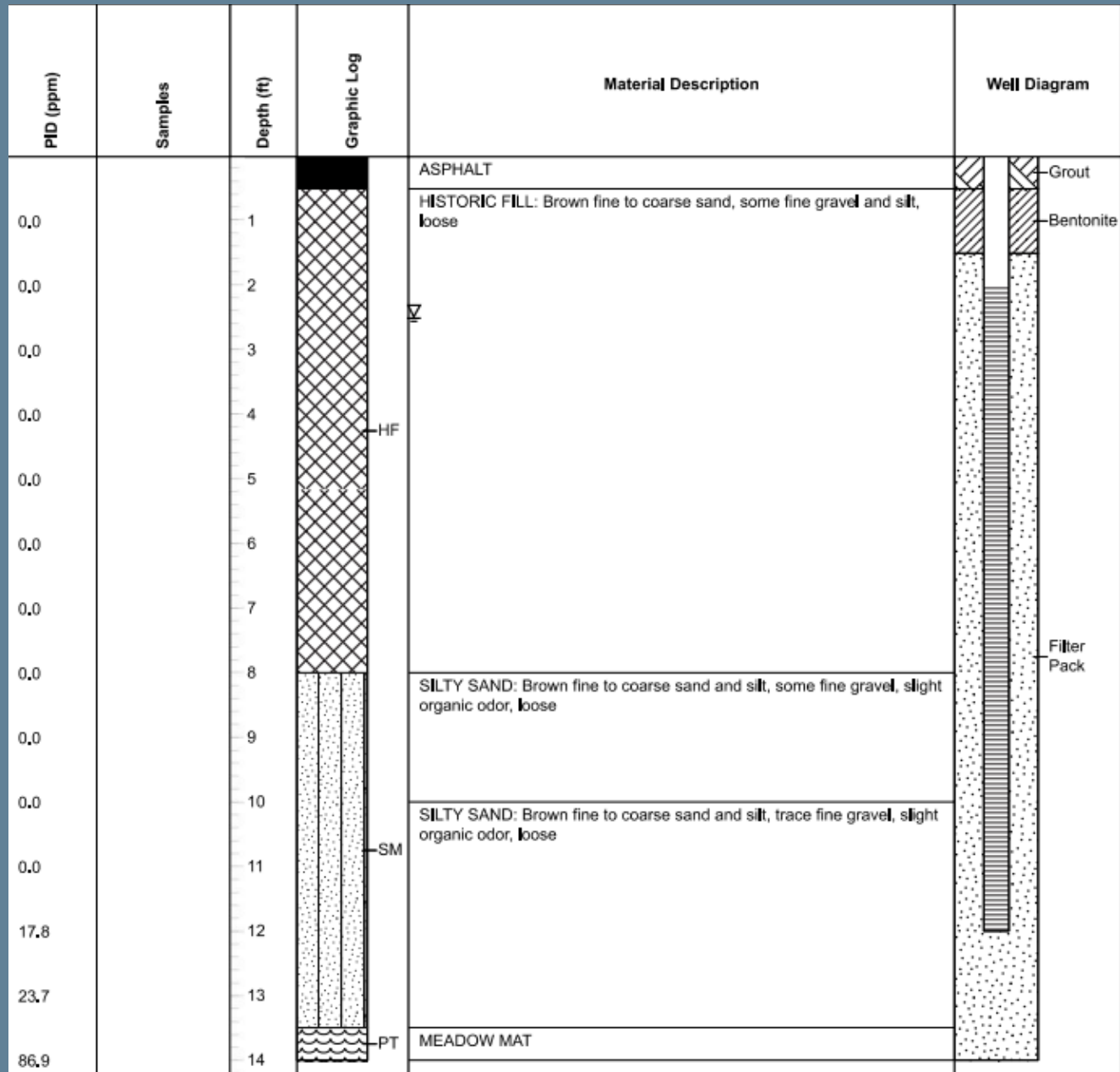
1 inch = 60 feet



PFOS Analytical Results

Client Sample ID:		NJ Groundwater Criteria (NJAC 7:9C 9/4/18) ¹	NJ Interim Groundwater Criteria (NJAC 7:9C 1/17/19) ²	FA-1	FA-2	FA-3	FA-4	FA-5	FA-6	FA-7	FB
Lab Sample ID:				JD2525-1A	JD2525-2A	JD2525-3A	JD2525-4A	JD2525-5A	JD2525-6A	JD2525-7A	JD2525-8A
Date Sampled:				1/29/2020	1/29/2020	1/29/2020	1/29/2020	1/29/2020	1/29/2020	1/29/2020	1/29/2020
Matrix:				Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Field Blank Water
MS Semi-volatiles (EPA 537M BY ID)											
Perfluorohexanoic acid	ug/l	-	-	3.79	0.0095	0.0445	0.731	0.0165	1.91	0.112	ND (0.00086)
Perfluoroheptanoic acid	ug/l	-	-	1.82	0.0049	0.0091	0.1	0.0088	0.224	0.0111	ND (0.00086)
Perfluorooctanoic acid	ug/l	-	0.01	0.89	0.004	0.0169	0.221	0.0087	0.276	0.0189	ND (0.00086)
Perfluorononanoic acid	ug/l	0.013	-	ND (0.0086)	0.0035	0.0062	ND (0.0086)	0.0274 J	ND (0.086)	0.004	ND (0.00086)
Perfluorodecanoic acid	ug/l	-	-	ND (0.0086)	0.0029 J	0.0044	ND (0.0086)	0.0036	ND (0.0086)	0.0029 J	ND (0.00086)
Perfluoroundecanoic acid	ug/l	-	-	ND (0.0086)	ND (0.00086)	ND (0.0043)	ND (0.0086)	ND (0.0086)	0.176	0.0061	ND (0.00086)
Perfluorododecanoic acid	ug/l	-	-	ND (0.013)	ND (0.0013)	ND (0.0065)	ND (0.13)	ND (0.013)	ND (0.013)	ND (0.0013)	ND (0.0013)
Perfluorotridecanoic acid	ug/l	-	-	ND (0.0086)	ND (0.00086)	ND (0.0043)	ND (0.0086)	ND (0.00086)	ND (0.0086)	ND (0.00086)	ND (0.00086)
Perfluorotetradecanoic acid	ug/l	-	-	ND (0.0086)	ND (0.00086)	ND (0.0043)	ND (0.0086)	ND (0.00086)	ND (0.0086)	ND (0.00086)	ND (0.00086)
Perfluorobutanesulfonic acid	ug/l	-	-	2.76	0.0047	0.025	0.437	0.0083	1.02	0.088	ND (0.00086)
Perfluorohexanesulfonic acid	ug/l	-	-	58.4	0.0414	0.253	5.73	0.115	7.29	0.79	ND (0.00086)
Perfluorooctanesulfonic acid	ug/l	-	0.01	4.45	0.17	0.868	33.8	0.421	61.7	1.96	ND (0.0013)
MeFOSAA	ug/l	-	-	ND (0.034)	ND (0.0034)	ND (0.0034)	ND (0.034)	ND (0.034)	ND (0.034)	ND (0.0034)	ND (0.0034)
EtFOSAA	ug/l	-	-	ND (0.034)	ND (0.0034)	ND (0.0034)	ND (0.034)	ND (0.034)	ND (0.034)	ND (0.0034)	ND (0.0034)

Monitoring Well FA-1



Total Well Depth – 13 feet bg

DTW – ~2.5 feet

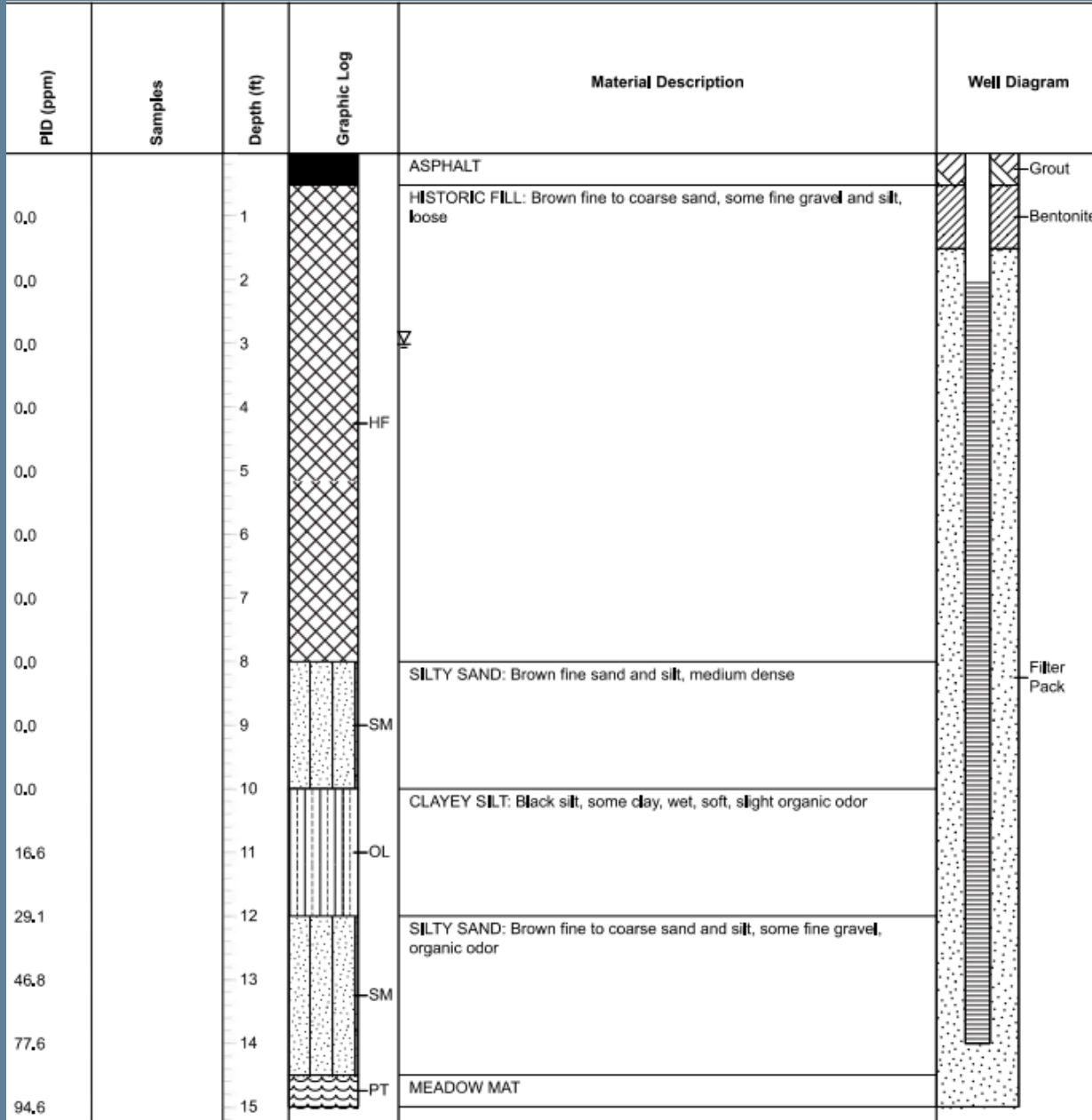
Screen – 2 to 13 feet bg

Client Sample ID:		NJGWQS	NJ Interim GWQS	FA-1
Lab Sample ID:				JD2525-1A
Date Sampled:				1/29/2020
Matrix:				Ground Water

MS Semi-volatiles (EPA 537M BY ID)

Perfluorohexanoic acid	ug/l	-	-	3.79
Perfluoroheptanoic acid	ug/l	-	-	1.82
Perfluorooctanoic acid	ug/l	-	0.01	0.89
Perfluorononanoic acid	ug/l	0.013	-	ND (0.0086)
Perfluorodecanoic acid	ug/l	-	-	ND (0.0086)
Perfluoroundecanoic acid	ug/l	-	-	ND (0.0086)
Perfluorododecanoic acid	ug/l	-	-	ND (0.013)
Perfluorotridecanoic acid	ug/l	-	-	ND (0.0086)
Perfluorotetradecanoic acid	ug/l	-	-	ND (0.0086)
Perfluorobutanesulfonic acid	ug/l	-	-	2.76
Perfluorohexanesulfonic acid	ug/l	-	-	58.4
Perfluorooctanesulfonic acid	ug/l	-	0.01	4.45
MeFOSAA	ug/l	-	-	ND (0.034)
EtFOSAA	ug/l	-	-	ND (0.034)

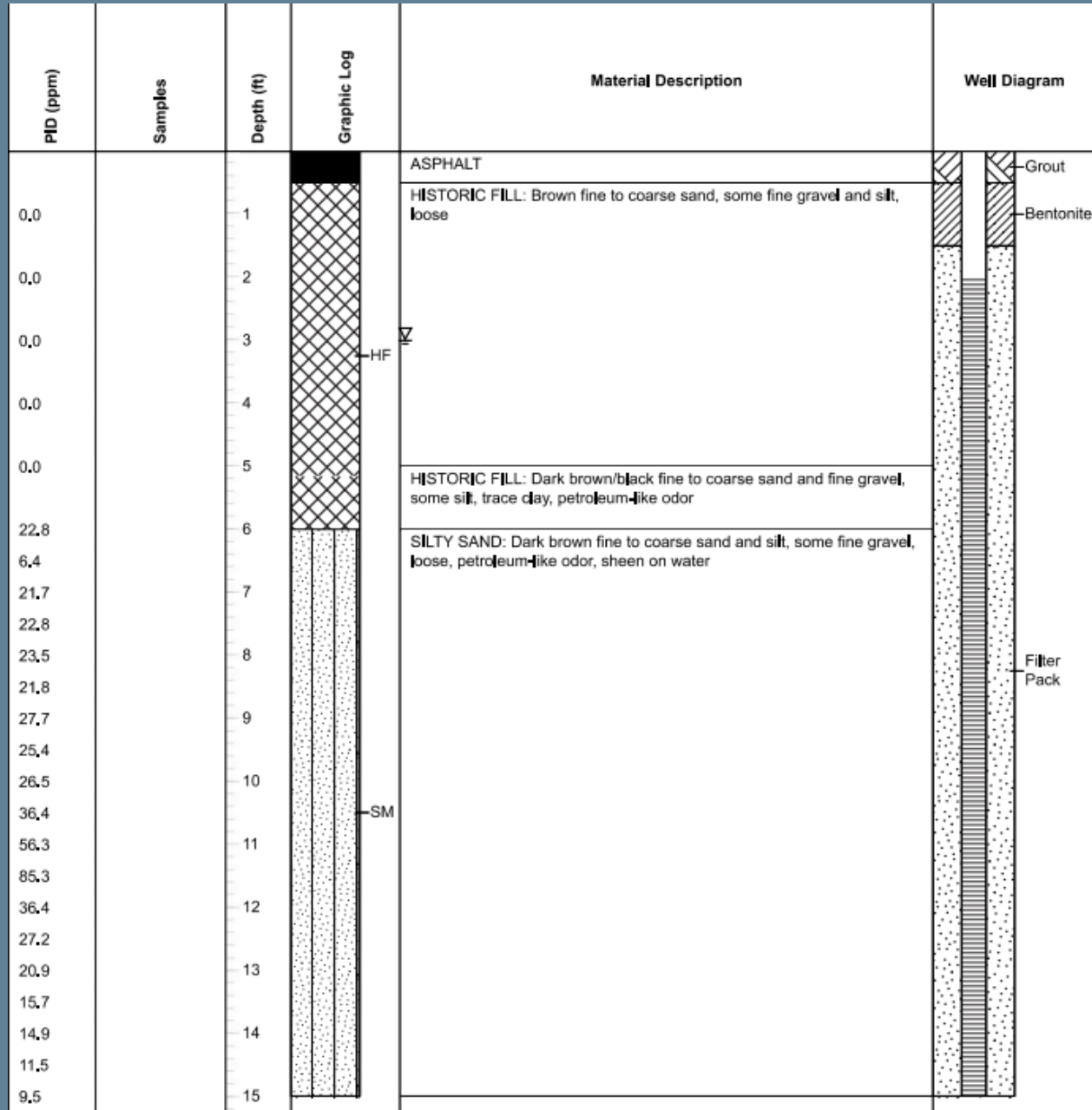
Monitoring Well FA-2



- Total Well Depth – 14 feet bg
- DTW – ~3 feet bg
- Screen – 2 to 14 feet bg

Client Sample ID:				FA-2
Lab Sample ID:				JD2525-2A
Date Sampled:		NJGWQS	NJ Interim GWQS	1/29/2020
Matrix:				Ground Water
MS Semi-volatiles (EPA 537M BY ID)				
Perfluorohexanoic acid	ug/l	-	-	0.0095
Perfluoroheptanoic acid	ug/l	-	-	0.0049
Perfluorooctanoic acid	ug/l	-	0.01	0.004
Perfluorononanoic acid	ug/l	0.013	-	0.0035
Perfluorodecanoic acid	ug/l	-	-	0.0029 J
Perfluoroundecanoic acid	ug/l	-	-	ND (0.00086)
Perfluorododecanoic acid	ug/l	-	-	ND (0.0013)
Perfluorotridecanoic acid	ug/l	-	-	ND (0.00086)
Perfluorotetradecanoic acid	ug/l	-	-	ND (0.00086)
Perfluorobutanesulfonic acid	ug/l	-	-	0.0047
Perfluorohexanesulfonic acid	ug/l	-	-	0.0414
Perfluorooctanesulfonic acid	ug/l	-	0.01	0.17
MeFOSAA	ug/l	-	-	ND (0.0034)
EtFOSAA	ug/l	-	-	ND (0.0034)

Monitoring Well FA-3



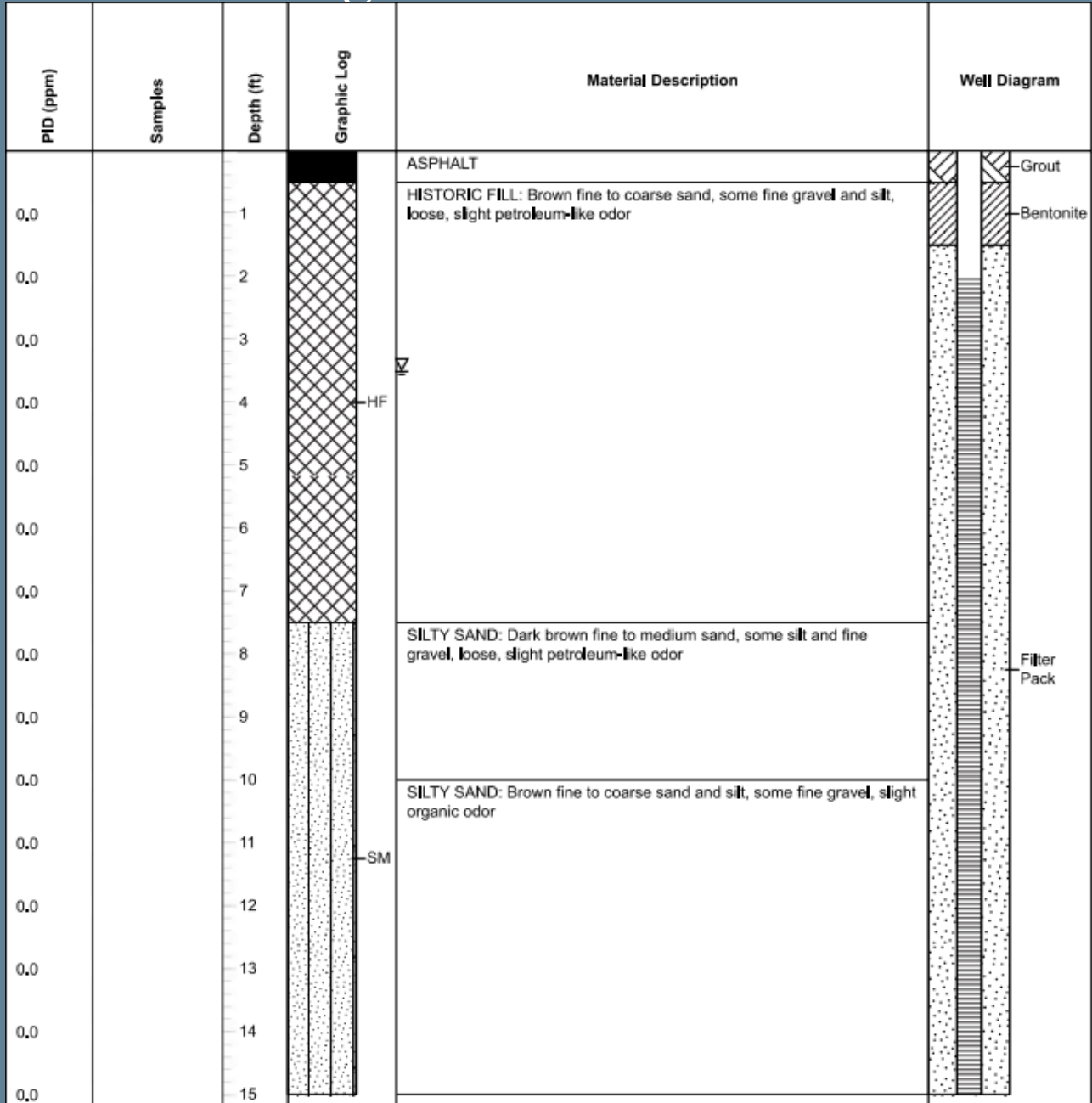
- Total Well Depth – 15 feet bg
- DTW – ~3 feet bg
- Screen – 2 to 15 feet bg

Client Sample ID:		NJGWQS	NJ Interim GWQS	FA-3
Lab Sample ID:				JD2525-3A
Date Sampled:				1/29/2020
Matrix:				Ground Water

MS Semi-volatiles (EPA 537M BY ID)

Perfluorohexanoic acid	ug/l	-	-	0.0445
Perfluoroheptanoic acid	ug/l	-	-	0.0091
Perfluorooctanoic acid	ug/l	-	0.01	0.0169
Perfluorononanoic acid	ug/l	0.013	-	0.0062
Perfluorodecanoic acid	ug/l	-	-	0.0044
Perfluoroundecanoic acid	ug/l	-	-	ND (0.0043)
Perfluorododecanoic acid	ug/l	-	-	ND (0.0065)
Perfluorotridecanoic acid	ug/l	-	-	ND (0.0043)
Perfluorotetradecanoic acid	ug/l	-	-	ND (0.0043)
Perfluorobutanesulfonic acid	ug/l	-	-	0.025
Perfluorohexanesulfonic acid	ug/l	-	-	0.253
Perfluorooctanesulfonic acid	ug/l	-	0.01	0.868
MeFOSAA	ug/l	-	-	ND (0.0034)
EtFOSAA	ug/l	-	-	ND (0.0034)

Monitoring Well FA-4



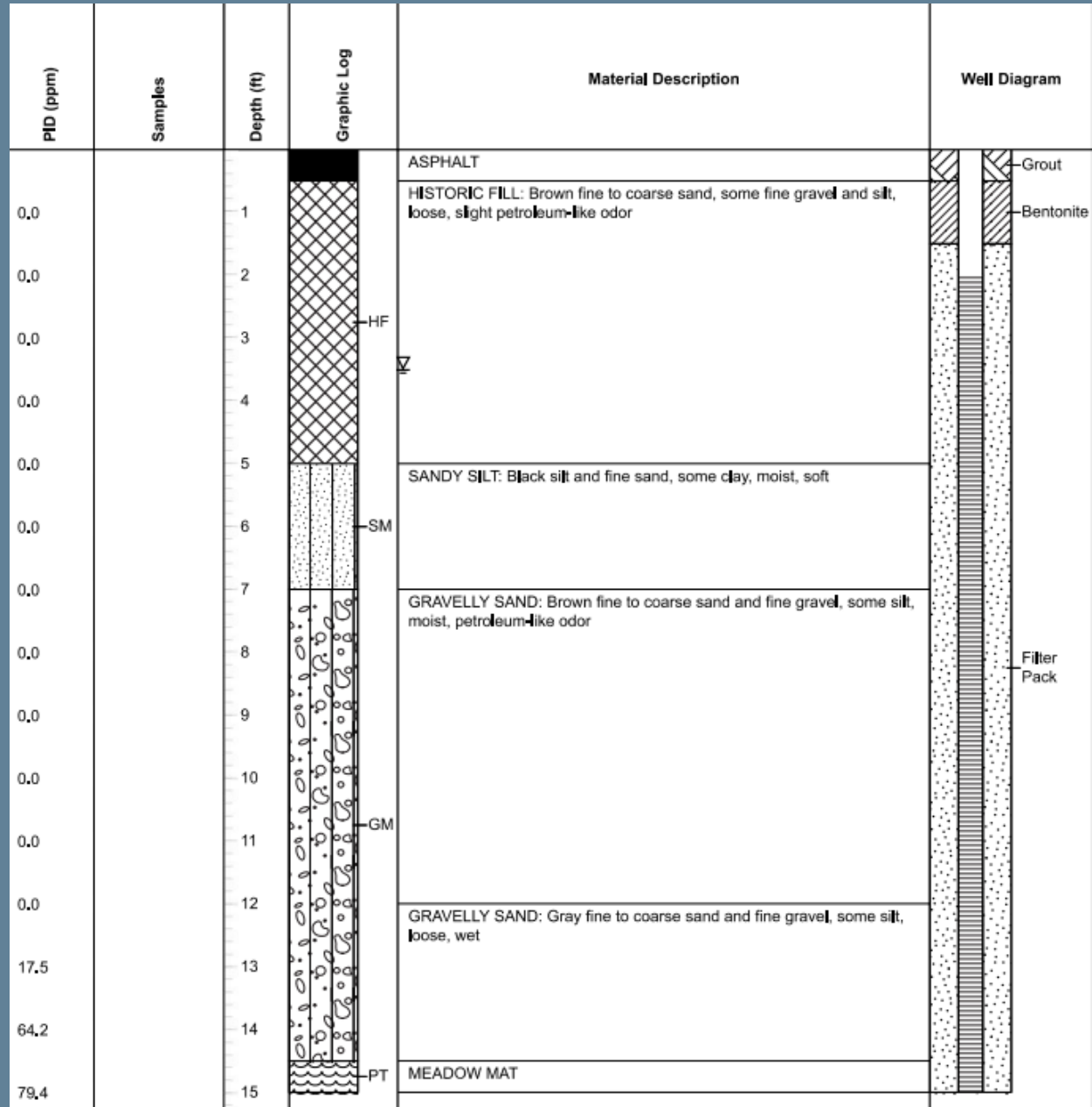
- Total Well Depth – 15 feet bg
- DTW – ~3.5 feet bg
- Screen – 2 to 15 feet bg

Client Sample ID:		NJGWQS	NJ Interim GWQS	FA-4
Lab Sample ID:				JD2525-4A
Date Sampled:				1/29/2020
Matrix:				Ground Water

MS Semi-volatiles (EPA 537M BY ID)

Perfluorohexanoic acid	ug/l	-	-	0.731
Perfluoroheptanoic acid	ug/l	-	-	0.1
Perfluorooctanoic acid	ug/l	-	0.01	0.221
Perfluorononanoic acid	ug/l	0.013	-	ND (0.0086)
Perfluorodecanoic acid	ug/l	-	-	ND (0.0086)
Perfluoroundecanoic acid	ug/l	-	-	ND (0.0086)
Perfluorododecanoic acid	ug/l	-	-	ND (0.13)
Perfluorotridecanoic acid	ug/l	-	-	ND (0.0086)
Perfluorotetradecanoic acid	ug/l	-	-	ND (0.0086)
Perfluorobutanesulfonic acid	ug/l	-	-	0.437
Perfluorohexanesulfonic acid	ug/l	-	-	5.73
Perfluorooctanesulfonic acid	ug/l	-	0.01	33.8
MeFOSAA	ug/l	-	-	ND (0.034)
EtFOSAA	ug/l	-	-	ND (0.034)

Monitoring Well FA-5



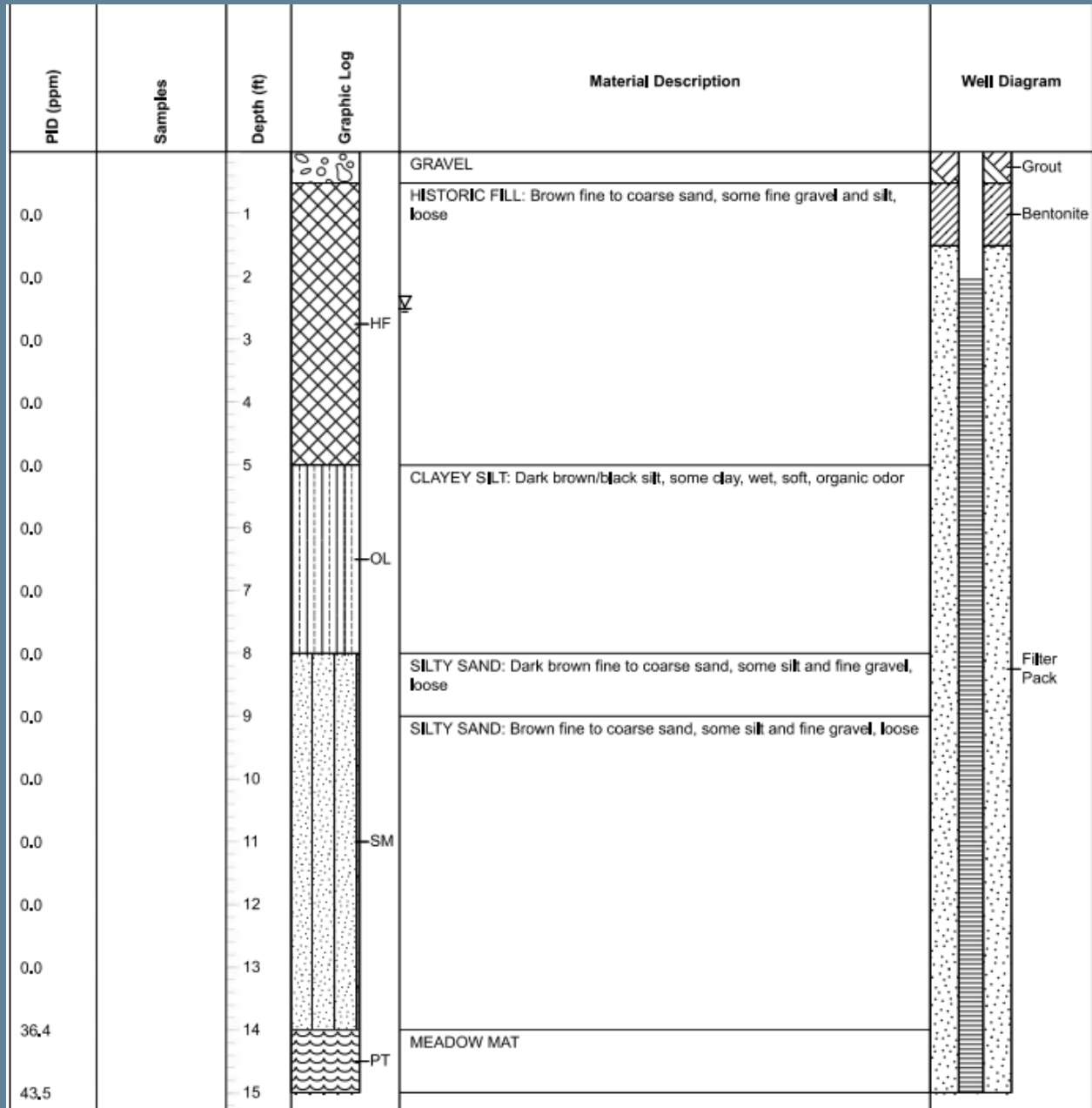
- Total Well Depth – 15 feet bg
- DTW – ~3.5 feet bg
- Screen – 2 to 15 feet bg

Client Sample ID:		NJGWQS	NJ Interim GWQS	FA-5
Lab Sample ID:				JD2525-5A
Date Sampled:				1/29/2020
Matrix:				Ground Water

MS Semi-volatiles (EPA 537M BY ID)

Perfluorohexanoic acid	ug/l	-	-	0.0165
Perfluoroheptanoic acid	ug/l	-	-	0.0088
Perfluorooctanoic acid	ug/l	-	0.01	0.0087
Perfluorononanoic acid	ug/l	0.013	-	0.0274 J
Perfluorodecanoic acid	ug/l	-	-	0.0036
Perfluoroundecanoic acid	ug/l	-	-	ND (0.0086)
Perfluorododecanoic acid	ug/l	-	-	ND (0.013)
Perfluorotridecanoic acid	ug/l	-	-	ND (0.00086)
Perfluorotetradecanoic acid	ug/l	-	-	ND (0.00086)
Perfluorobutanesulfonic acid	ug/l	-	-	0.0083
Perfluorohexanesulfonic acid	ug/l	-	-	0.115
Perfluorooctanesulfonic acid	ug/l	-	0.01	0.421
MeFOSAA	ug/l	-	-	ND (0.034)
EtFOSAA	ug/l	-	-	ND (0.034)

Monitoring Well FA-6



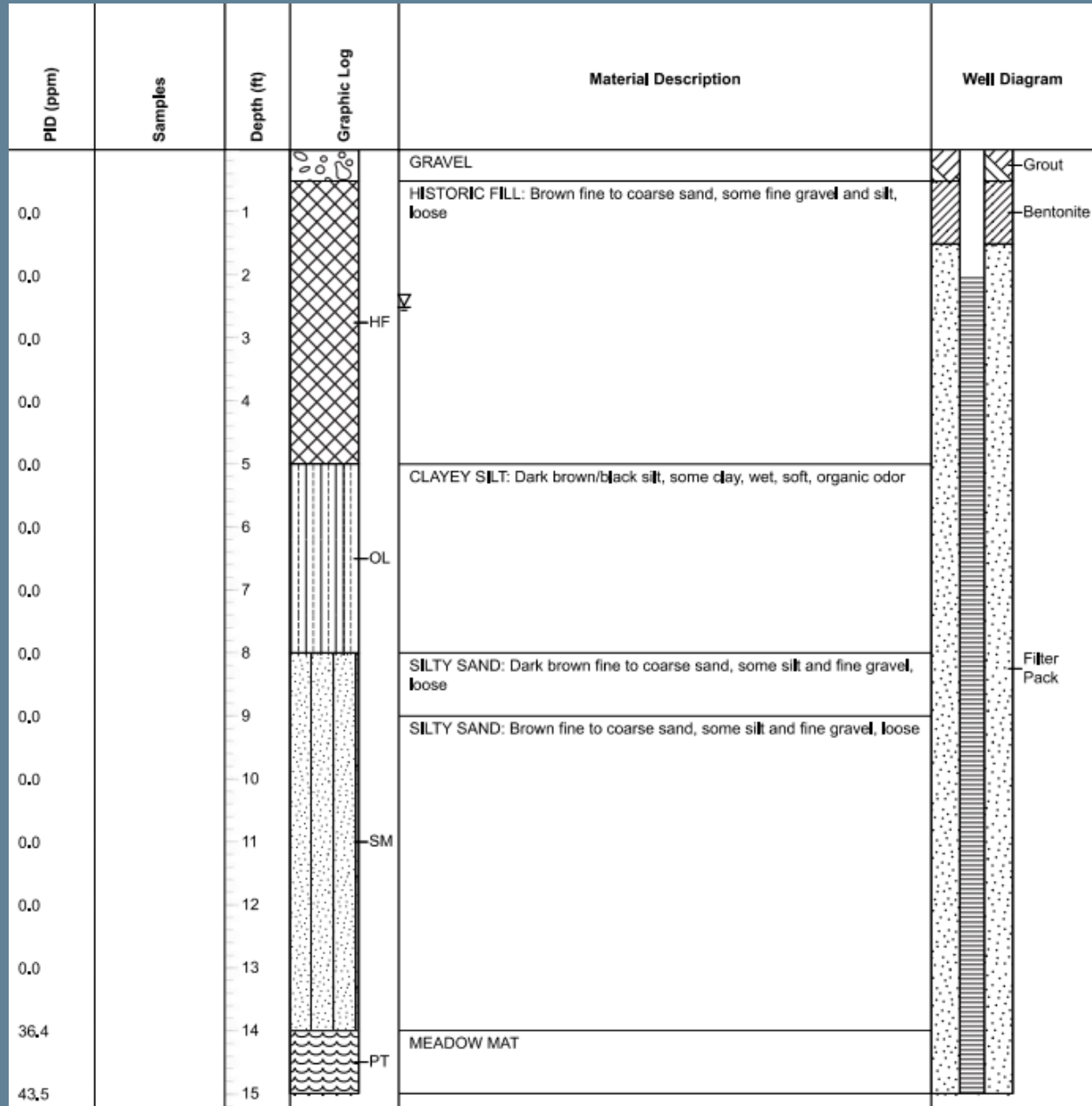
- Total Well Depth – 15 feet bg
- DTW – ~2.5 feet bg
- Screen – 1 to 15 feet bg

Client Sample ID:		NJGWQS	NJ Interim GWQS	FA-6
Lab Sample ID:				JD2525-6A
Date Sampled:				1/29/2020
Matrix:				Ground Water

MS Semi-volatiles (EPA 537M BY ID)

Perfluorohexanoic acid	ug/l	-	-	1.91
Perfluoroheptanoic acid	ug/l	-	-	0.224
Perfluorooctanoic acid	ug/l	-	0.01	0.276
Perfluorononanoic acid	ug/l	0.013	-	ND (0.086)
Perfluorodecanoic acid	ug/l	-	-	ND (0.0086)
Perfluoroundecanoic acid	ug/l	-	-	0.176
Perfluorododecanoic acid	ug/l	-	-	ND (0.013)
Perfluorotridecanoic acid	ug/l	-	-	ND (0.0086)
Perfluorotetradecanoic acid	ug/l	-	-	ND (0.0086)
Perfluorobutanesulfonic acid	ug/l	-	-	1.02
Perfluorohexanesulfonic acid	ug/l	-	-	7.29
Perfluorooctanesulfonic acid	ug/l	-	0.01	61.7
MeFOSAA	ug/l	-	-	ND (0.034)
EtFOSAA	ug/l	-	-	ND (0.034)

Monitoring Well FA-7



- Total Well Depth – 15 feet bg
- DTW – ~2.5 feet bg
- Screen – 2 to 15 feet bg

Client Sample ID:		NJGWQS	NJ Interim GWQS	FA-7
Lab Sample ID:				JD2525-7A
Date Sampled:				1/29/2020
Matrix:				Ground Water

MS Semi-volatiles (EPA 537M BY ID)

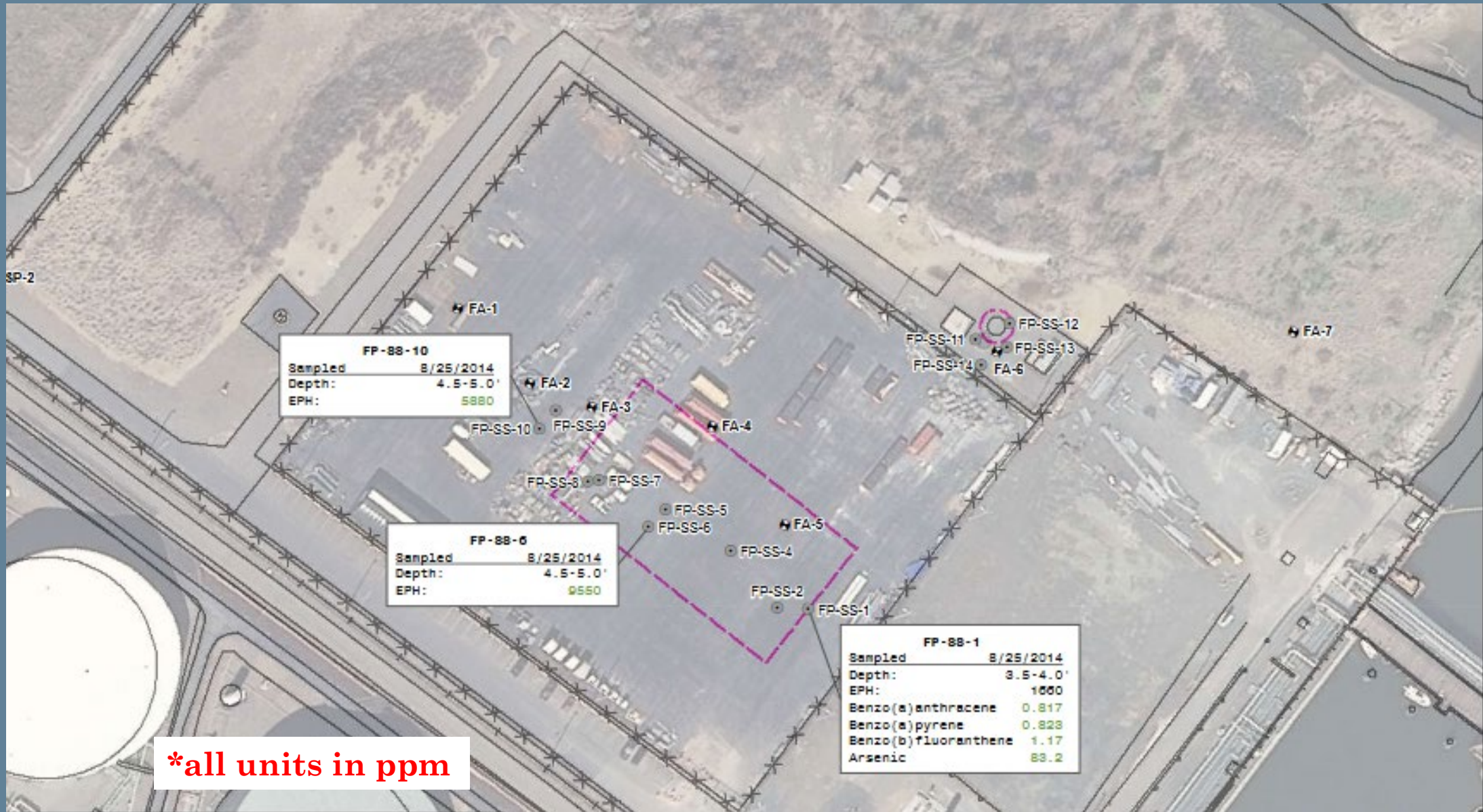
Perfluorohexanoic acid	ug/l	-	-	0.112
Perfluoroheptanoic acid	ug/l	-	-	0.0111
Perfluorooctanoic acid	ug/l	-	0.01	0.0189
Perfluorononanoic acid	ug/l	0.013	-	0.004
Perfluorodecanoic acid	ug/l	-	-	0.0029 J
Perfluoroundecanoic acid	ug/l	-	-	0.0061
Perfluorododecanoic acid	ug/l	-	-	ND (0.0013)
Perfluorotridecanoic acid	ug/l	-	-	ND (0.00086)
Perfluorotetradecanoic acid	ug/l	-	-	ND (0.00086)
Perfluorobutanesulfonic acid	ug/l	-	-	0.088
Perfluorohexanesulfonic acid	ug/l	-	-	0.79
Perfluorooctanesulfonic acid	ug/l	-	0.01	1.96
MeFOSAA	ug/l	-	-	ND (0.0034)
EtFOSAA	ug/l	-	-	ND (0.0034)

Groundwater Sampling Parameters

- Sampling Method – 3 Volume Purge

Well ID	Well Permit #	Sampling Date	DTW	Screen Interval	PID	GW Elevation	Well Diameter	Well Construction
FA-1	E202000100	1/29/2020	2.68	2 to 13'	14.5	6.99	2"	Flush
FA-2	E202000101	1/29/2020	6.51	2 to 14'	4.7	3.88	2"	Flush
FA-3	E202000102	1/29/2020	8.79	2 to 15'	27.2	2.05	2"	Flush
FA-4	E202000103	1/29/2020	9.03	2 to 15'	7.1	1.95	2"	Flush
FA-5	E202000104	1/29/2020	8.21	2 to 15'	3	2.01	2"	Flush
FA-6	E202000105	1/29/2020	10.33	1 to 15'	0.5	1.8	2"	Stick-up
FA-7	E202000106	1/29/2020	9.28	2 to 15'	0.1	1.12	2"	Stick-up

AOC 103 Wells & SI Soil Analytical Results



Proposed RI Activities

- Install 5 new monitoring wells
- Collect groundwater samples from existing Site monitoring wells (SP-2, SP-3, and BG-3)

